

Product Evaluation

FR39 | 0819

Engineering Services Program

The following product has been evaluated for compliance with the wind loads specified in the International Residential Code (IRC) and the International Building Code (IBC).

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.

For more information, contact TDI Engineering Services Program at (800) 248-6032.

Evaluation ID: FR-39

Effective Date: September 1, 2019

Re-evaluation Date: September 2023

Product Name: Structural Insulated Panels (SIPs)

Manufacturer: Eagle Panel Systems, Inc.
127 North Maple Street
Mulberry Grove, IL 62262
(800) 643-3786

General Description:

Structural Insulated Panels (SIPs) are factory assembled structural insulated panels that are used for roofs and exterior walls in both structural and non-structural applications. The SIPs consist of exterior and interior facings bonded to an expanded polystyrene (EPS) foam core with a structural grade adhesive.

The exterior facing consists of 19/32" thick oriented strand board (OSB) conforming to PS-2-04, Exterior Type, TECO listed and have a span rating of 40/20. The interior facing for the wall panel consists of 1/2" thick Gypsum Board manufactured by USG. The interior facing for the roof panel consists of Eastern White Pine Tongue & Groove (T&G) planking. The T&G is 6-7/8" wide by 3/4" thick.

The foam core is 3-5/8" thick for the wall panel and 5-5/8" thick for the roof panels. The foam core material is 1.0 pcf (nominal) density expanded polystyrene (EPS) foam. The foam is UL Listed and classified as Type I and II with a flame spread rating of 20 and a smoke development rating

of 400. The foam core is adhered to the facings with a structural grade adhesive. The adhesive is applied during the lamination process in accordance with the in-plant quality control manual.

The wall and roof panels have studs incorporated within the EPS core. The wall panels have 1-1/2" x 3-5/8" No. 2 Southern Yellow Pine studs spaced at 16" on center. The roof panels have 1-1/2" x 5-5/8" No. 1 Southern Yellow Pine rafters spaced at 24" on center.

Product Identification: Each Eagle Panel Systems SIP will bear the manufacturer's name, identification of the assembly, and the label/stamp of the inspection agency, PFS Corporation.

Limitations/Installation:

General: Eagle Panel Systems Structural Insulated Panels are fabricated, identified, and erected in accordance with this evaluation report, the approved construction documents, and the applicable building codes. In the event of a conflict between the manufacturer's published installation instructions and this evaluation report, this evaluation report will govern. Approved construction documents must be available at all times on the jobsite during installation.

Structures built using the Eagle Panel Systems SIPs must be designed by a Texas licensed professional engineer. Requirements for the design of the SIPs are based on the tables and details specified in this evaluation report and the manufacturer's installation requirements. The tables presented in this evaluation report are for the design of the SIPs for walls and roofs. The design of chords, struts, and connections (such as the attachment of diaphragms to chords and struts, the attachment of the SIPs to the foundation and the hardware required to resist uplift, shear and the overturning of the shear wall segments) must be designed separately by a Texas licensed engineer. Design drawings must include complete instructions for the connection and installation of the SIP panels. The design drawings must be sealed and dated by a Texas licensed engineer. The design drawings must reference the appropriate edition of the wind load standard (ASCE 7) used based on the current building specifications adopted by the TDI. The basic wind speed and the exposure category used for the design must also be referenced.

The wall panel exterior 19/32" OSB facing is attached to the wall studs with 8d x 2-1/2" common nails at 8" on center. The roof panel exterior 19/32" OSB facing is attached to the roof rafters with No. 8 x 1-3/4" deck screws at 8" on center. Refer to Figure 7 for a section detail on the wall and roof panel.

The top and bottom plates of the wall panels must be double 1-1/2" x 3-5/8" No. 2 SYP. The plates are secured to the wall studs with two (2) No. 8 x 3" deck screws per stud.

The SIP panels are interconnected to each other at the panel joints. Refer to Figures 1-6 for typical Eagle Panel joint connection details. The wall panels use a 1-1/2" x 3-5/8" No. 2 SYP connecting spline at each panel joint. The spline is inserted into a 3/4" deep routed void on the side of the panels. The spline is secured in place using 8d x 2-1/2" stainless steel nails or a No. 8 x 1-1/4" coated deck screws at 6" on center. The roof panels are connected with an OSB spline on the exterior and a tongue and groove joint on the interior at each panel joint. The OSB spline is

inserted into a slot in the foam core just inside the exterior facing on the panel sides. The OSB spline is secured in place using No. 8 x 1-1/4" coated deck screws at 6" on center. All panel joints shall be sealed in accordance with the installation instructions.

Design loads: Design wind loads for the SIPs must be determined using the wind load requirements for the structure as specified in the building specifications adopted by the TDI. All loads on the SIPs must not exceed the allowable loads specified in the load design charts.

Load Design Charts: Allowable axial, transverse, and racking loads for the SIPs must be as specified in Tables 1 thru 4 of this evaluation report. NOTE: The requirements specified in the tables in this evaluation report will govern if there are any conflicts between the manufacturer's Load Design Charts and the tables and figures in this evaluation report.

Foundation: The foundation is considered to be part of the structure and must be considered part of the design of the structure. If the foundation is not designed by the engineer responsible for the design of the SIP system, then the design plans must include such. As a minimum, the design plans must indicate how the SIP system is to be anchored to the foundation. If the foundation is included as part of the design, then the design plans must include all details and specifications related to the design of the foundation to resist the specified wind loads and must indicate how the structure is to be anchored to the foundation.

Roof Coverings: The design plans must indicate the requirements for the roof coverings. The roof coverings must comply with the building specifications adopted by the TDI. For roof coverings other than asphalt shingles, the design plans must specify the design pressure requirements for the roof covering. The roof covering must be installed as required to resist wind pressure.

Exterior Wall Coverings: Exterior wall coverings must be installed as required to resist wind pressure. Products must comply with the building specifications adopted by the TDI. The design plans must specify the design pressure requirements for the exterior wall covering.

Windows, Doors, Garage Doors and Skylights: Products must be installed as specified in evaluation reports to resist wind pressure. Products must comply with the building specifications adopted by the TDI. The design plans must specify the design pressure requirements for these products. The design plans must indicate if the products are required to be windborne debris resistant. Windborne debris resistant products must be installed as specified in the evaluation reports to resist wind pressure and windborne debris.

Shutters: The design plans must indicate if shutters are required. Products must be installed as specified in the evaluation reports or the building specifications adopted by the TDI as required to resist wind pressure and windborne debris. Products must comply with the building specification adopted by the TDI. The design plans must specify the design pressures requirement for the shutters.

Note: A set of sealed plans, manufacturer's installation instructions, Eagle Panel Systems Load Design Charts for SIPs (Structural Insulated Panels), and this product evaluation report must be available to the inspector at the job site at all times. Use corrosion resistant fasteners as specified in the IRC, the IBC, and the Texas Revisions.

Maximum Wall Panel Size: 8'-0" wide x 9'-0" tall x 4-3/4" thick

Table 1: Allowable Transverse Loads on Wall Panels

Clear Span (ft)	Positive Loading (psf)			Negative Loading (psf)		
	Deflection Limit			Deflection Limit		
	L/180	L/240	L/360	L/180	L/240	L/360
8'-6"	43.3	43.3	38.3	79.7	58.0	38.7

Table 2: Allowable Axial Loads on Wall Panels

Wall height (ft)	Axial Load (plf)
9'-0"	2812.4

Table 3: Allowable Racking Loads on Wall Panels

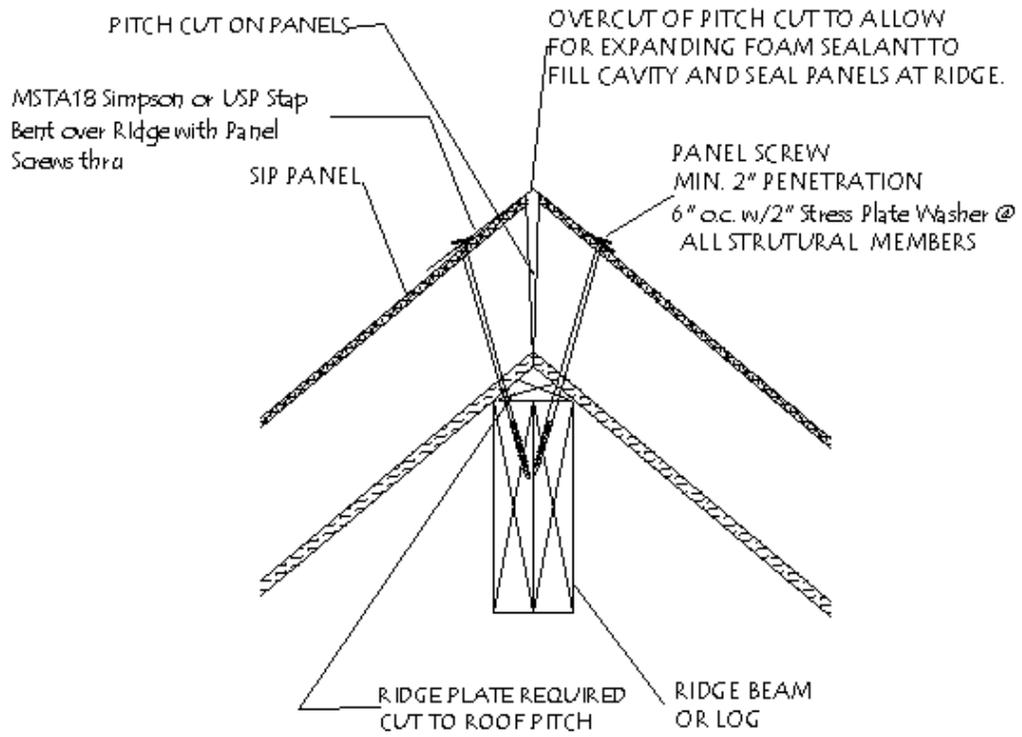
Wall Height (ft)	Racking Load (plf)
9'-0"	148.2

Maximum Roof Panel Size: 4'-0" wide x 14'-0" tall x 7" thick**Table 4:** Allowable Uniform Loads on Roof Panels

Clear Span (ft)	Positive Loading (psf)			Negative Loading (psf)		
	Deflection Limit			Deflection Limit		
	L/180	L/240	L/360	L/180	L/240	L/360
13'-6"	51.1	38.7	26.0	60.7	45.0	30.0

Table Notes:

1. Allowables are based on the lesser value of a Factory of Safety of 3.0 or deflection requirements.
2. Deflection limits must be selected by the building designer based on the serviceability requirements of the structure and the requirements of the applicable building codes adopted by the TDI. Deflection values based on loads of short duration only and do not consider effects of creep.



PANEL CONNECTION AT RIDGE BEAM

Figure 1.

ROOF PANEL SPLINE CONNECTION

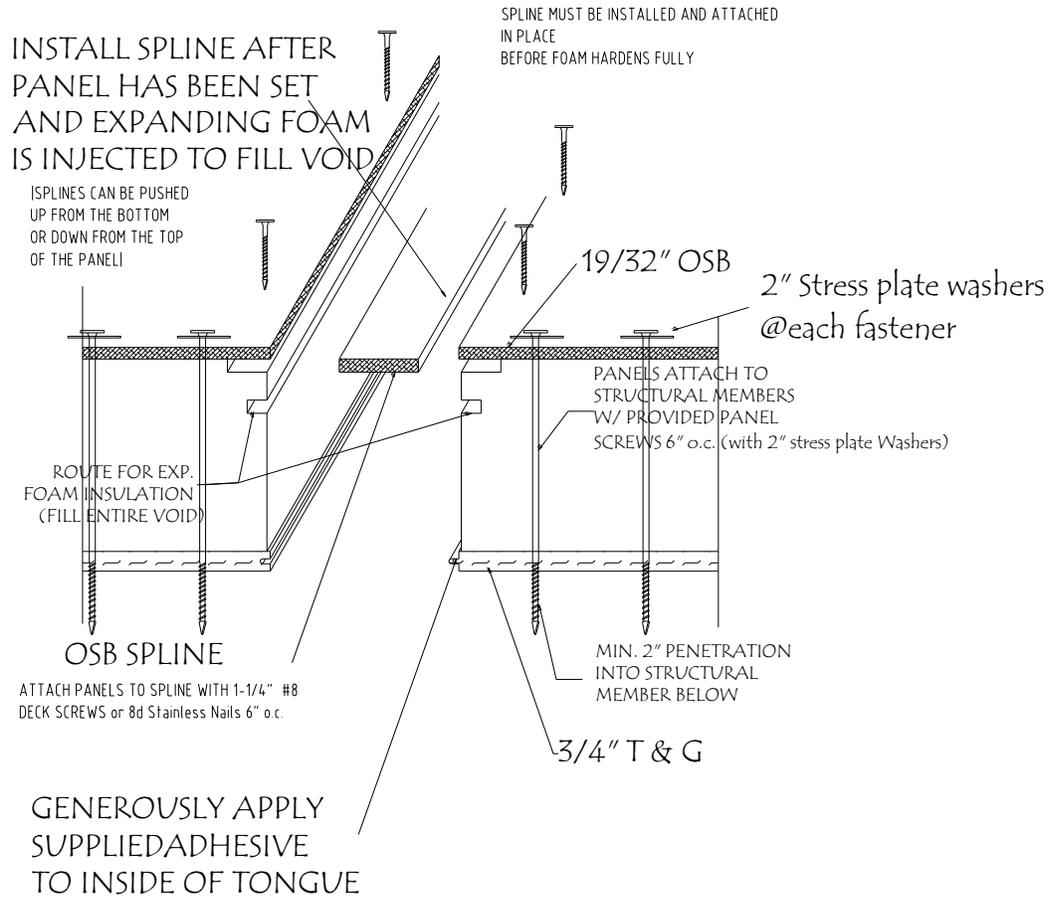


Figure 2.

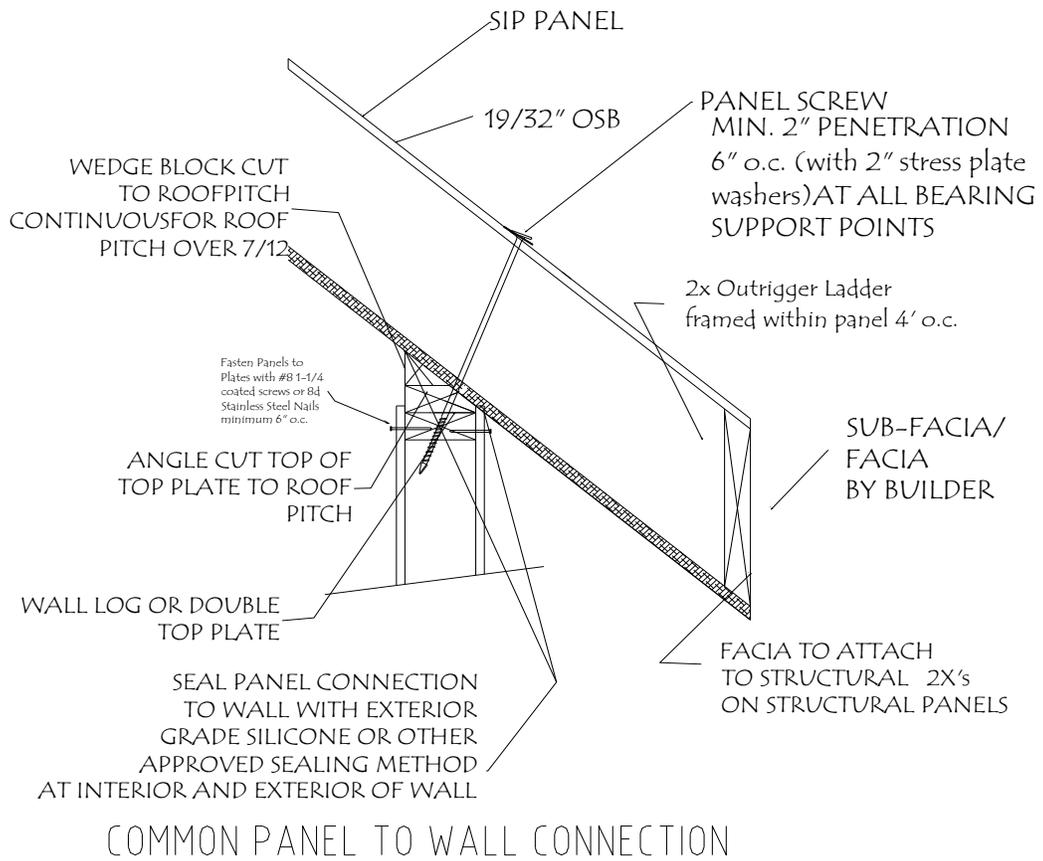
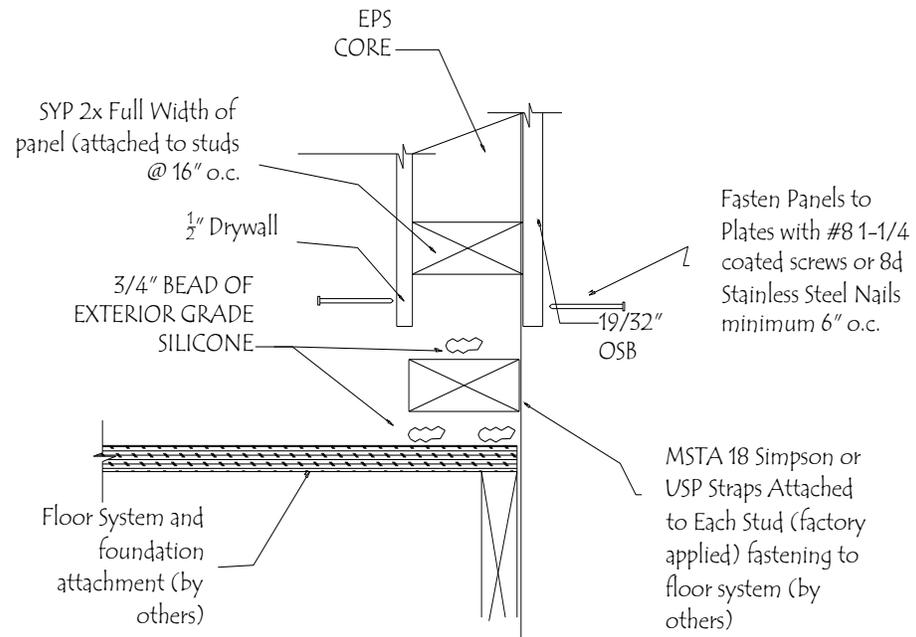


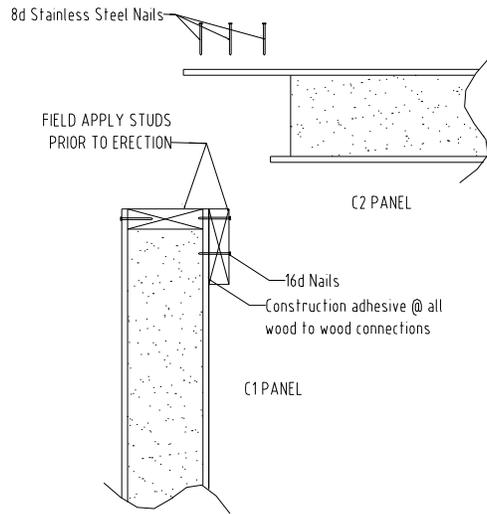
Figure 3.

WALL PANEL TO FLOOR CONNECTION



Square floor system and mark outer edge of 2x bottom plate $\frac{7}{16}$ " from edge of floor system, apply two $\frac{3}{4}$ " beads of Exterior Grade of Silicone to sub floor, nail or screw bottom plate to floor securely. Apply $\frac{3}{4}$ " bead of mastic or silicone to top of 2x before placing panel over 2x Plumb and brace panel and attach to bottom plate,

Figure 4.



Field Apply Studs to C1 Panel Prior to Erection, Stand C1 Panel and Secure Over Bottom Plate. Stand C2 Panel and Slide into Position. Plumb & Square Both C1 & C2 Panels and Secure with 16d Nail.

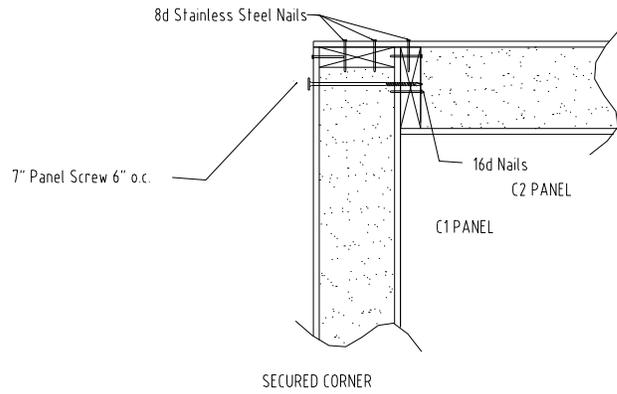


Figure 5.

WALL PANEL SPLINE CONNECTION

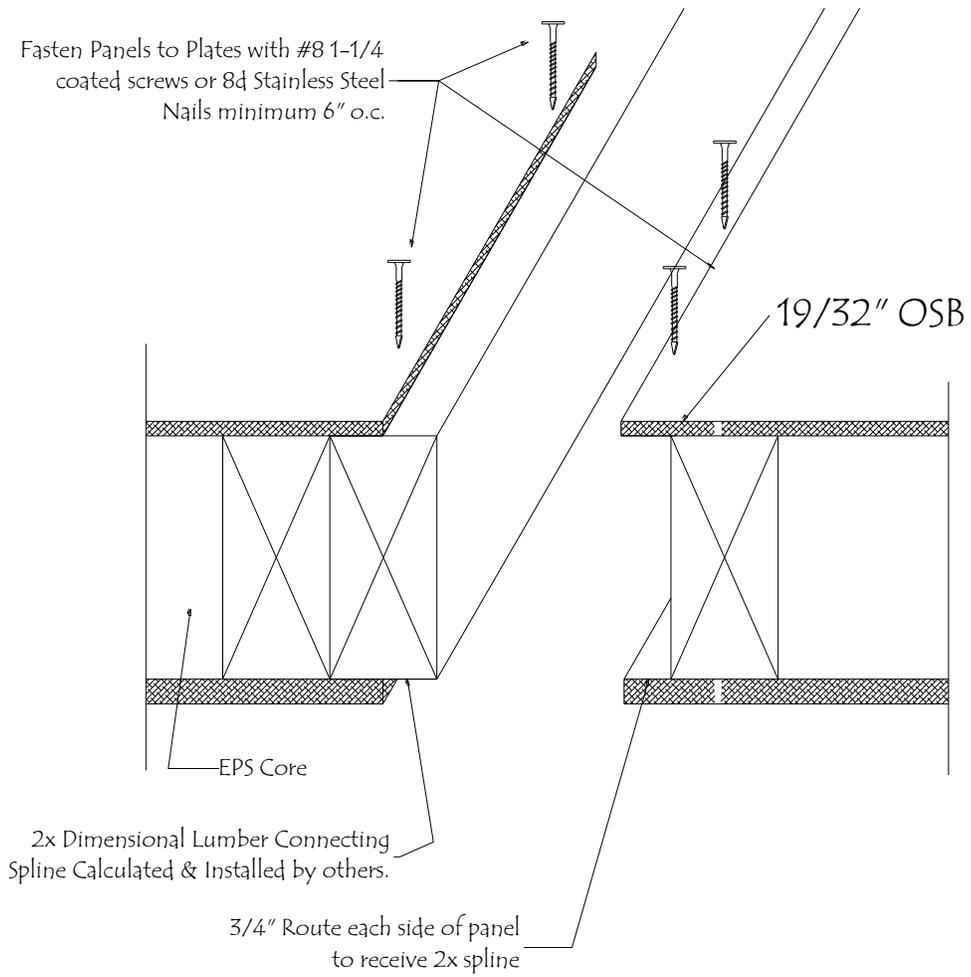


Figure 6.

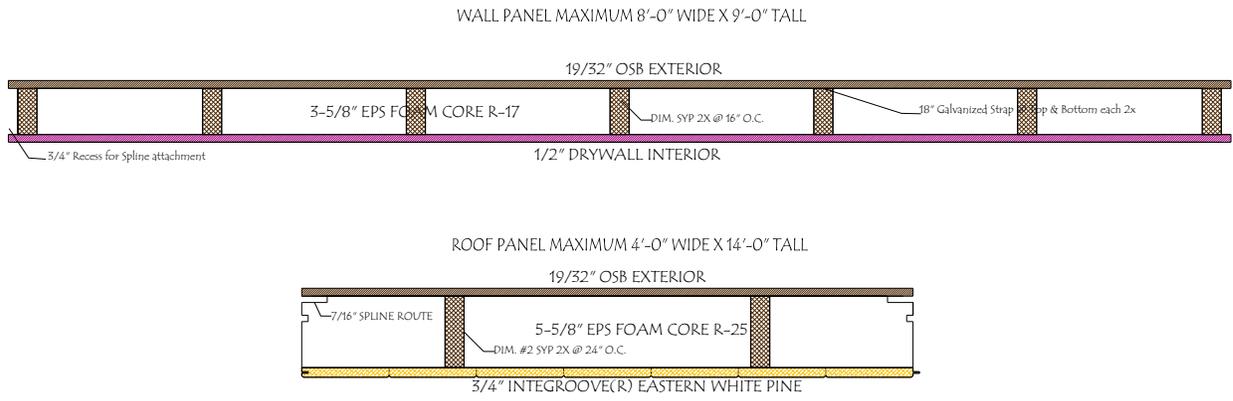


Figure 7.